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should be abandoned together with the insufficient neurone theory, and facts concerning the neurofibrillæ should be sought. This in general is Nissl's position and it will probably carry to the mind of the neuronist the conviction that if this is a fair example of what the neurone theory will have to meet, that theory is still very safe.

**Notes.** — The earliest stages in the development of the teeth in selachians have been investigated by Laaser (*Jena. Zeitschr. f. Naturwissenschaft*, Bd. 37, pp. 551–578), who finds that in embryos of *Spinax*, *Acanthias*, and *Mustelus* of three to four centimetres in length, a dental ridge is formed by a thickening of the epithelium of the jaws. The ridges are formed earlier in the lower jaws of *Spinax* and *Acanthias* and in the upper jaw of *Mustelus*. Teeth develop not only in the dental ridges but also in the adjacent epithelium where in their early stages they are indistinguishable from placoid scales. The first hard part formed is the dentine, the enamel being entirely absent at these early stages.

Professor Bastian (London, Williams & Margate. Pt. II. 1902, pp. 63–147, pls.) presents in a second installment much additional evidence in favor of his views on heterogenesis. Thus he believes he has shown that vorticellæ may be produced from a pellicle largely composed of spirilla, that amoebæ may be made to segment and their parts be converted into ciliate infusoria, that the entire egg of the rotifer *Hydatina* can be transformed into a ciliate infusorian *Otostoma*, etc. The paper is illustrated by photographic reproductions but even these cannot shake the conviction of many zoologists, that because of the methods used something is probably wrong with the observations recorded in the text.

Dr. J. Anglas has published as number 17 of the biological series of "*Scientia*" a clear account of the changes undergone by the tissues during the internal metamorphosis of insects. The histogenesis of early development is first taken up, then the process of histolysis, and finally the reconstructive processes. The book contains a final chapter on the causes of internal metamorphosis.

The origin and classification of leucocytes and a very readable discussion of the theories of their relations to health and disease have been published in the biological series of "*Scientia*" numbers 15 and 16 by Dr. J. Levaditi.

Fischer (*Jena. Zeitschr. f. Naturwissenschaft*, Bd. 37, pp. 691–726) has

made a thorough-going embryological study of the carpus and tarsus of the problematic mammal Hyrax. Since in the embryo the hind foot shows traces of the first and fifth digits, the extremities of Hyrax point to derivation from a primitive form with five digits. The embryonic carpus contains two centralia like the embryonic carpus of the turtle. Traces of both prepollex and prehallux were found. The carpus and tarsus of Hyrax must have been derived from a more primitive form than Phenacodus. Since they show as many affinities to the rodents as to the fossil ungulates, Hyrax has probably been derived from some form in which these two types were united, the Toxodontia, or possibly the more primitive Tillodontia.

The growth of micro-photography has been so rapid that the A B C of the subject has been issued in a handy volume by W. H. Walmsley (N. Y., Tennant & Ward, 1903. iv-155 pp., 13 pls.). Chapters are devoted to the microscope, the camera, illumination, negative making and printing. The experience of an expert, the high quality of whose work is attested by the illustrations that accompany the volume, is given freely to the beginner.

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#### BOTANY.

**Setchell and Gardner's N. W. Algæ.**<sup>1</sup>—This is a careful and thorough account of the marine Algæ of the Pacific coast of America from Cape Flattery north to the Arctic Ocean, and of the fresh water species found near the shore through the same range, the Diatomaceæ and Desmidiaceæ excepted. The information hitherto accessible has been scattered through many books and papers in various languages, and this is now brought together, but covers only the smaller part of the present work, the rest being now presented by the authors for the first time. This is specially the case as to the fresh water Algæ, in regard to which very little indeed is on record previous to this work.

Every species mentioned by previous writers is included in this list, even if the authors consider the determination as unreliable, or that

<sup>1</sup> Setchell, W. A. and Gardner, N. L. Algæ of Northwestern America. Univ. Cal. Publications, Botany, Vol. 1, pp. 165-418; Pl. XVII-XXVII. Berkeley, March 31, 1903.